MULTIMEDIA UNIVERSITY

STUDENT ID

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FINAL EXAMINATION

TRIMESTER 2, 2018/2019

TIS1101 – Database Fundamentals

(All sections / Groups)

8 MARCH 2019
9.00 a.m - 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 5 pages, including the cover page, with FOUR questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the answer booklet provided.

Answer ALL Questions

QUESTION 1

Draw a complete entity-relationship diagram (ER-D) using Crow's Foot notation based on the following business rules:

- A customer may subscribe at most 3 newspapers. A customer is identified uniquely using customerID.
- A newspaper is subscribed by at least 5 customers and is identified uniquely using newspaperID.
- A newspaper falls under one of the two categories: (1) local and (2) international. Local newspaper covers events in a local context, while international newspaper contains events from around the world. Local and international newspapers are distinguished by category.
- Newspapers are stored in many warehouses. A warehouse is identified uniquely using warehouseID. Each warehouse may be categorized into one of two types: (1) small and (2) large. Small warehouse stores many international newspapers, while large warehouse stores many local newspapers. Small and large warehouses are distinguished by warehouse type.

The primary key and foreign key (if any) must be included for every entity, other attributes are optional. The cardinality, connectivity and relationship strength in your ER diagram must be denoted accordingly.

[10 marks]

Continued .....

QUESTION 2

Answer questions (a) to (d) based on the following relational schema about EURO CUP 2016 tournament. The primary key for each relation is in bold and foreign key is underlined.

TEAM (**TeamID**, TeamGroup, Country, Won, Lost, Draw)

REFEREE (**RefereeID**, RefereeName, Country)

MATCH (**MatchID**, TeamID, MatchDate, GameStatus, RefereeID)

(a) Assume that TEAM and REFEREE tables have been created. Write a SQL statement to create the MATCH table. Sample data stored in MATCH table are as below. You may assume any suitable data types for the attributes in the table.

MatchID	TeamID	MatchDate	GameStatus	RefereeID
1	4	2016-06-11	W	2
2	1	2016-06-11	L	6
3	3	2016-06-12	D	5
4	5	2016-06-13	W	1
5	8	2016-06-13	D	3
6	7	2016-06-13	W	3

[2.5 marks]

(b) Write a SQL statement to list the country name, date of game, status of the game and the name of referee of winning matches, which were held on 13th June 2016.

[2 marks]

(c) Write a SQL statement to list the names of referees who have refereed in at least two games whose name contains the word 'Marciniak'.

[3 marks]

(d)

i. Write a SQL statement to create a trigger that will automatically set the GameStatus to 'W' for all the rows. The trigger will be invoked each time a new row is inserted into the MATCH table.

ii. Write a SQL statement to invoke the trigger created in Question 2(d)(i).

[2+0.5 marks]

Continued .....

QUESTION 3

Answer questions (a) – (c) based on the following relation:

PlayerID	PlayerName	Position	MatchID	MatchName	TeamID	TeamName	Score

(a) Draw the dependency diagram in 1NF for the above relation. Show all the dependencies and underline the primary key(s).

[4 marks]

(b) Based on your solution in Question 3(a), normalize the dependency diagram to 2NF. Draw the resulting dependency diagram and underline the primary key(s).

[3 marks]

(c) Based on your solution in Question 3(b), normalize the dependency diagram to 3NF. Draw the resulting dependency diagram and underline the primary key(s).

[3 marks]

Continued .....

QUESTION 4

(a) Explain the THREE types of maintenance activities.

[3 marks]

(b) A data warehouse is the focal point for decision support system. Explain any TWO roles of a data warehouse in supporting decision-making.

[2 marks]

(c) It is possible that an implementation fails to meet some of the system's evaluation criteria during the *testing and evaluation* phase of database life cycle (DBLC). What are the THREE options that a database designer can consider when enhancing the system?

[3 marks]

(d) List any TWO characteristics of internet technologies.

[2 marks]

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